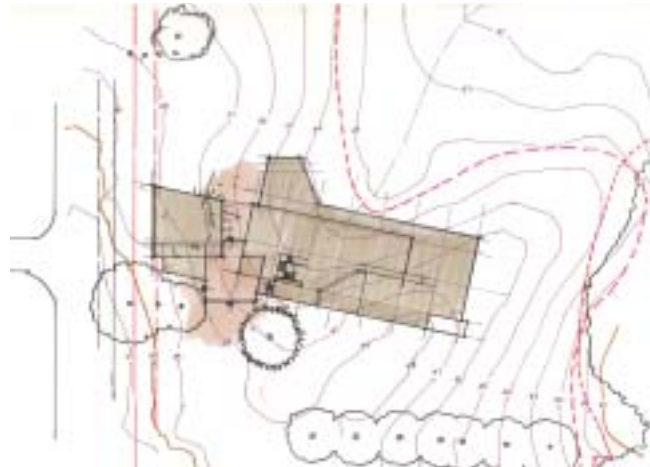


site development

General Site

The main design objective for the site design of the New Tigard Library is to locate the building, parking, and other support facilities in order to protect, enhance, and celebrate the beautiful, natural characteristics of the property. It is important that the built and natural environments function together as an efficient and cohesive whole. The site design process began by evaluating the natural characteristics of the site, the topography, natural features, drainage ways, flood plain, and significant vegetation. The information was compiled into an analysis plan that highlights these natural features, thus outlining the most appropriate locations for the Library building and the adjacent parking.



Site plan

Other important objectives to be explored through the continuing design process will be universal accessibility to all areas of the site and the protection and enhancement of the natural resources on the property and along Fanno Creek. The landscape team established ten principles of sustainable site design that will be used throughout the project to arrive at the most site-sensitive and sustainable design solutions possible. Those principles are:

- Reduce storm water runoff
- Reduce water consumption
- Conserve energy
- Control erosion
- Rebuild disturbed soils

- Enhance ecological connectivity
- Reduce lawn
- Protect existing vegetation
- Protect rivers, streams, and wetlands
- Utilize local and recycled materials

Utilizing sustainable site design, the goal will be to create continuity between exterior spaces and the building through consistent construction materials, colors, and details that will result in a recognizable image for the entire project, tying together architecture, landscape architecture, and natural resources into a unified whole.

Building and Parking Siting

The parking lot and building configurations were driven by the desire to save as many of the very large, significant trees spanning the site as possible, as well as to enhance the natural rolling topography. The New Tigard Library and Community Meeting Room buildings are sited linearly, east to west, with the long north face of the buildings taking advantage of the best views. Across the gently rolling “bowl”, to Fanno Creek and beyond, the views from the first and second stories of the Library building allow visitors to take in the natural beauty that makes this site so special.

The parking lot has undergone many studies in the effort to maximize on-site parking for the facility while protecting vegetation. The mature nature of existing trees will add a character to the development of this site that could not be achieved using new plant material.

Entry and Parking

The library visitor will enter the site through an entry drive off of the proposed Wall Street. There are two drop-off areas, one for books and another for library visitors. The book-drop is located in the turn-around area at the east end of the building, which will also provide service access and a small number of parking spaces. In the center of the turn around will be some building mechanical systems hidden by a monument welcome sign and new vegetation. The passenger drop-off area is located in a plaza directly south of the common entrance to the New Tigard Library and Community Meeting Room. The plaza will have areas for gathering, seating, and bicycle parking. Seating will occur on long, low, linear walls that separate the drop-off from the rest of the plaza creating an exterior room for group gatherings and screened bicycle parking. Additional seating is provided on a long narrow bench that will lead people into the main lobby of the New Tigard Library.

The 120-stall parking lot is designed around the existing trees. There are concrete curbs around a small portion of the parking area, which will direct storm water flow to specific outlets and into storm water treatment swales. The rest of the parking lot will sheet drain into those same storm water swales that will treat and clean the storm run-off before being discharged into Fanno Creek. Where there are no curbs, wheel-stops will be used to safely keep vehicles on the parking lot.

Courtyard

After visitors have entered the building, they will have access to another exterior plaza that exists on the north side of the lobby, between the Community Meeting Room and the Library. This space will act as an outdoor reading, education, and gathering space. An artistically designed scupper, or drain spout, will collect storm water from the roof of the building and empty storm water into a concrete or stone conveyance channel that begins as a paving pattern in front of the building and leads visitors through the lobby space and into the courtyard. The terraced channel will have stone or river rock along with aesthetically interesting wetland plant



Site constraints diagram showing access and buildable area

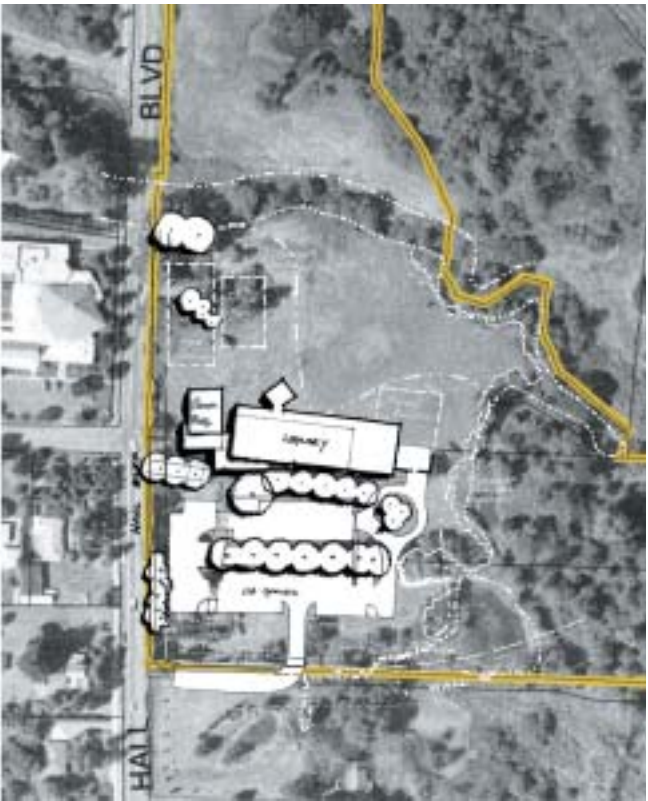
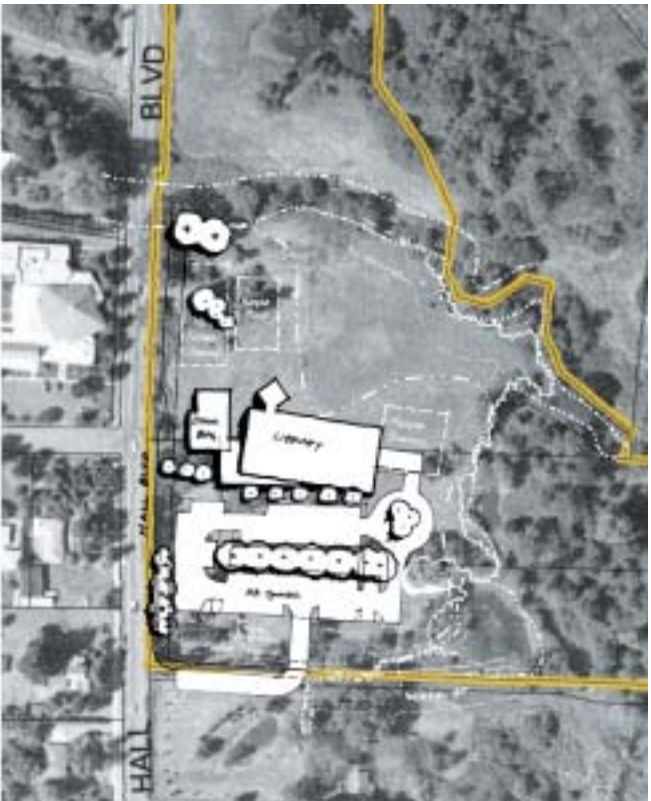
material, and will convey the water down the steps into a large gravel sump infiltration area. This educational art piece will be bordered by native planting areas and a brick paved gathering space that will act as a space for children and library users to gather. Any overflow from the infiltration area will be directed to the storm water treatment system before being released into Fanno Creek.

Natural Site

Beyond the building and the parking area is the rest of the natural site, which will be protected in its current condition, or enhanced. The areas directly adjacent to the building and the parking will be planted with native Oregon plant material, wherever possible, and will be selected carefully to blend the building into the site. The large open space “bowl” to the north of the building will be maintained in its current form, but could be over-seeded with native grasses appropriate to the site. There is a 50-foot Clean Water Services buffer zone to the south of Fanno Creek that will need to be cleared of invasive plant materials and replanted with appropriate native riparian vegetation to bring the buffer up to current CWS vegetation corridor standards.

Site/Section Studies

Site and building section studies were done to understand impact of the buildings and parking in the landscape. Attempts were made to save as many of the large, significant trees as possible and work the parking requirements around them. Views and natural light were also major considerations in the building section studies. More detail is provided in the appendix section of this report.



civil systems

On-Site Improvements

Water

A 12-inch ductile iron main in Hall Boulevard provides water service to the site. The tapping connection point will be 120 feet south of the intersection at O'Mara Street. The fire service consists of an 8-inch ductile pipe with a double check valve assembly located in a vault at the property line. Domestic service consists of a 2-inch Schedule 80 service with a water meter and double check assembly at the property line. On-site fire suppression consists of four hydrants and a fire department connection pipe.

Sanitary Sewer

A 6-inch lateral will extend to the south and connect to an existing sanitary sewer in the proposed Wall Street Alignment. Final sewer location will depend on building plumbing, tree conflicts, and avoiding an identified wetland area.

Storm Drainage

Site storm drainage consists of conveyance and water quality facilities. Due to the proximity of Fanno Creek, detention facilities are not required. In accordance with Clean Water Services Standards, two water quality swales are proposed at the south and east ends of the property. These swales will discharge into Fanno Creek with outfalls. Site conveyance consists of a variety of pipes and channels conveying the drainage to the water quality swales.

Off-Site Improvements

Hall Street Improvements

Hall Street is a state highway administered by ODOT. Current regulations require a half-street improvement as a condition of development. The half-street improvement consists of widening the pavement by approximately 11 feet to a total pavement width of 50 feet (the eventual width will be 74 feet), and adding an 8-foot sidewalk with a variable planter strip. The Hall Street vertical and horizontal alignment should be coordinated with Wall Street and other development activities in the area.

ODOT will require a storm drainage system with water quality swale. The drainage pipe placement will consider future widening of the street.

Wall Street Improvements

The main access for the new library site will occur from Wall Street. A three-quarter street improvement must be constructed as part of this project. The three-quarter improvement consists of a 36-foot wide pavement section with curb and a 6-foot sidewalk constructed on the library side of the road. Wall Street improvements will be constructed in accordance with City of Tigard standards.

The Tigard transportation plan identifies Wall Street, which borders the south property line, as a future collector street. An alignment study addressing the horizontal and vertical is underway. Final site access and grading is contingent on the design alignment of Wall Street.

A 12-inch water main will be constructed in the Wall Street right of way.

Fanno Creek

Floodplain and Natural Resources

Fanno Creek composes the eastern boundary of the new library site. Fanno Creek, a major stream corridor in Eastern Washington County, drains many urban areas. Fanno Creek has an established floodway and a floodplain elevation of 141.6. Altering the floodway or floodplain requires a variety of local, state, and federal permits. This project will not be altering the floodway or flood plan.

Fanno Creek is classified as a riparian corridor under Clean Water Services Standards and contains wetland areas under DSL/Corps of Engineers regulations. Any modifications to the corridor and stream banks should be conducted in accordance with the appropriate regulatory standards. The regulatory standards require delineation, assessment, mitigation, and permitting of any impacted areas.

architectural and interiors systems



Axonometric sketch showing structure/interiors

Interior

Walls

- 4" and 6" x 20 ga metal stud framing @ 16" OC with 5/8" gypsum wallboard
- Low VOC paint throughout
- Acoustical batts in all partitions
- Exposed steel frame, painted

Floors

- Elevators- carpet at public elevator, linoleum at staff elevator.
- Throughout except as noted below - carpet broadloom. 6" wood base and chair rail (maple).
- Lobby – stone or tile, stone base.
- Restrooms – ceramic tile, tile wainscot to 5 feet
- Storage, Donations, mail/loading, mechanical and electrical rooms, janitor – sealed concrete, rubber base
- Technical Services, reference workroom, staff corridors, staff room, circulation workroom, pantry – sheet linoleum, rubber base
- Staff offices (admin) – carpet and rubber base

Ceilings

- First floor – acoustical tile and 5/8' wheatboard hung ceiling, 2x2 regular in public areas floating 18" from wall. Allow 50% acoustical tile/50% wheatboard. Staff areas - acoustical tile. Paint black above

- Second floor – 2x6 wood decking over steel beams in all public areas. Staff areas - acoustical tile.
- Community Meeting Room – 4x4 regular acoustical tile floating 18" away from wall
- Lobby - wood decking over steel beams
- Restrooms - hard ceiling

Casework

- Public areas – wood face and base on public side, wood counter edge, linoleum top; plastic laminate cabinets and doors on staff side; at coffee bar, reference, children's, info and circulation desks.
- Staff areas – all plastic laminate at kitchen and pantry

Millwork and Trim:

- 6" wood base and chair rail in public areas where there is carpet, on gyp walls only

Doors and Frames

- Solid core wood doors with transparent finish in wood frames
- Full height and length relites on second floor walls facing public areas, at quiet study rooms, Oregon history, young adults, training, and conference room.
- Sliding glass wall system at Training Room, Grace T. Houghton Room, Young Adult's, and Oregon History.

Stairs

- Steel stringers and risers with concrete treads on both stairs.
- Carpet over at public stair.
- Public Stair – steel post and rail with wood cap and wood handrails.
- Staff stair – framed walls with metal handrail.

Elevator

- Two hydraulic, 3500-lb. elevators (one public, one staff/service)

Accessories

- Wood and glass display case with glass doors and lighting between lobby and public stair, full height
- Manual mecco shades 95% opaque in Community Meeting Room
- Toilet partitions - polymer plastic
- Staff lockers - metal
- Metal fireplace with stone surround gas
- Additional plumbing fixtures not shown on plans – 3 drinking fountains, 2 hand wash sinks.

Exterior

Walls

- Library - exterior walls consist of brick veneer on 6" metal stud walls at 24" OC with 6" fiberglass insulation, exterior gyp sheathing, 6 mil. vapor barrier, and 5/8" gyp board
- Community Meeting Room - exterior walls consist of brick veneer, 1" air space, 2" rigid insulation on 8" reinforced concrete block. Concrete block to be acoustical block in the main Community Meeting Room.
- The wall between the Community Meeting Room and lobby to be a 2-hour firewall consisting of all CMU grouted full and horizontal 2-hour gyp separation at the roof extending 10' from the CMU wall.

Glazing Walls/Windows

- Glazed curtain wall to be Kawneer 1600 mil. finish or similar with "low e" clear glass at Lobby; storefront elsewhere with "low e" clear glass; 1" insulated with operable windows where indicated on elevations. Spandrel panels at structure areas. Metal panels on the south elevation where indicated on the drawings.
- Aluminum or steel light shelves on the south exterior windows where indicated on drawings.

Doors

- Doors in glazed curtain wall to be aluminum, heavy duty, full glass-insulated/tempered "low e" clear, with hand-capped operators on one pair for the main entry doors (north and south) into the lobby.
- Exterior doors from the community room and children's area to be aluminum, heavy-duty, full glass-insulated/tempered "low e" clear.
- Main doors into the library from the lobby to be aluminum, heavy-duty, full glass, clear tempered, with handicapped operator on one pair.
- All remaining exterior doors to be hollow metal doors and frames.

Roofing

- Main library sloped roof to be prefinished, 24-gauge, standing seam, metal roof with prefinished metal fascia and soffit.
- Low-sloped roof to be fully adhered, single-ply roofing with prefinished metal fascia and soffit.
- Roof drainage to be with exposed metal rain gutters designed into the architecture with exposed architectural rain leaders running to landscape water features or treatment area.

Entry Canopy

- Entry canopy at the main lobby and at staff/book drop area to be metal structure with prefinished metal soffit and metal fascia. Roofing to be adhered membrane roofing with exposed gutter and rain leaders.

structural systems

Building Summary

The New Tigard Library will be a two-story steel framed building with a clerestory that extends above the primary roof elevation.

Directly adjacent to the main building will be a one-story structure with concrete masonry bearing walls and a steel framed roof. A seismic joint will physically separate the two buildings.

Design Criteria

1997 Uniform Building Code as amended by the State of Oregon.

- Seismic Zone 3.
- Wind: 80 miles per hour, Exposure B.
- Floor Live Load: 125 pounds per square foot.
- Roof Live Load: 25 pounds per square foot minimum snow load, higher at areas of drift potential.
- Allowable Soil Bearing Pressure: 3,000 pounds per square foot.

Foundation

The foundation system for both structures will consist of concrete spread footings that will support the column and wall loads, and resist the lateral forces.

Substructure

The first floor slab on grade will consist of a four-inch reinforced concrete slab. Beneath the slab will be a 10-mil polyethylene vapor retarding membrane on top of a six-inch layer of ¾"-minus crushed rock.

Second Floor framing

The floor structure will be steel wide flange beams and girders with a composite 2 ½" steel floor deck and 3 ½" inch normal weight concrete topping to support stack loading. Columns will be either 10" x 10" steel tubes or 10" wide flange sections.

Roof framing

The roof framing for the main building will consist of wide flange beams and girders supporting two-by-six tongue and groove decking with ½" structural plywood above.

The roof framing for the adjacent one story structure will consist of open web steel joists supporting 1 ½" steel roof deck.

Lateral load resisting system

In the main building, wind and seismic lateral forces will be resisted by steel-braced frames. These forces will distribute to the frames via a rigid diaphragm at the second floor and a flexible diaphragm at the roof.

In the adjacent one-story building, concrete masonry shear walls will resist the lateral forces. A flexible diaphragm at the roof will distribute load to these walls.

Cladding

The cladding system for the main building will consist of six-inch light gauge metal studs as the backup framing for a brick veneer. The metal studs will attach to the main building at the second floor and roof elevations.

The cladding system for the adjacent structure will consist of a brick veneer attached directly to the concrete masonry walls and a curtain wall system at the entry to the lobby.

mechanical systems

A complete HVAC system will be provided for the library building, consisting of a central hot-water boiler system, a central air-cooled water chiller, variable air volume (VAV) air handling units and exhaust systems. Temperature control and zoning throughout the library will be achieved through variable air volume terminal units with hot water reheat coils where required. A central DDC control system will monitor and control all HVAC functions and will be managed through a central computer station with a graphics interface and modem for remote access.

One of the project goals for the Tigard Library is to design a sustainable building. One aspect of sustainable design is a careful analysis of the building's energy use and the source of that energy. The mechanical systems that heat and cool the building are one of the major users of energy and, as a result, their selection has a significant impact on the sustainability of the building.

A completely sustainable building would use no more water than the amount of rainfall that falls on its roof annually. The Tigard area has an average annual rainfall of approximately 42 inch and approximately 705,000 gallons of water will fall on the roof of the library. We are currently estimating how much water the new building will use for domestic water.

A completely sustainable building would use no more energy than the amount provided from the sun. The solar energy that hits the roof of our building is equivalent to an energy budget of 3,200,000 kwh/yr. Unfortunately, current technology allows only approximately 10% of this energy to be harnessed for use in this building (320,000 kwh/yr). A typical building of this size uses approximately 1,102,000 kwh/yr (Based on an Energy Use Index (EUI) of 80 kbtu/sf/yr). By implementing some of the systems to be analyzed by the PGE Earth Advantage sponsored study the energy use of the library can be reduced by 20% to 40%.

HVAC

The first step in designing a sustainable mechanical system is to reduce the cooling and heating loads in the building. This can be done by using thermally efficient windows, highly insulated walls and roofing, natural daylighting, efficient lighting with dimmable electronic ballasts, etc. This will serve to reduce the size of the equipment.

During the schematic design and design development stages, an energy model of the building will determine the operating costs of each system. The results will be published in a report showing first cost, operating costs, maintenance costs, simple payback and life-cycle costs. That report will be used to select the final mechanical system.

Design Assumptions

Outdoor Conditions for Tigard, Oregon

(Based on 2001 ASHRAE Fundamentals Handbook)

- Summer Design Conditions: 90°F DB/ 67°F WB ASHRAE 0.4%
- Winter Design Conditions: 22°F ASHRAE 99.6%

Indoor Conditions

- Cooling Season: 75°F ±2°F for the majority of the occupied hours.
- Heating Season: 70°F±2°F
- Relative Humidity: No humidity control.

Outside Air Requirements

(1997 UBC Table 12-A, and ASHRAE Std 62-1999)

- General: 20 CFM/person

Heating System

A hot-water heating system will provide all heating functions for the Library. Two 1,000 MBH hot-water condensing boilers will be located in a central mechanical room. The boilers will be on a primary pumping loop and the distribute heating water pumps will be a secondary variable volume system serving the air handler heating coils, terminal unit heating coils, and other heating devices such as unit heaters and finned tube radiation. A radiant floor heating system will be considered for the children's area and the lobby.

The heating water piping will be a primary/secondary configuration in which each boiler has a dedicated primary pump to circulate a constant volume of heating water through the boiler. Secondary pumps fitted with variable frequency drives will distribute heating water to the building air handling systems. The pumps and associated valves and piping accessories will be located in the mechanical room.

Chilled Water System

One 160-ton, air-cooled water chiller will provide cooling capacity to air handling systems throughout the Library. The chiller will be located on grade and be piped under ground to the mechanical room.

Two chilled water pumps will circulate a constant volume of chilled water through the chiller and to the air handlers. Each air handling unit will have a three-way valve for temperature control. One of the chilled water pumps will be a redundant pump. The pumps and associated valves and piping accessories will be located in the mechanical room.

Central Air Handling Systems

Three roof-mounted variable air volume (VAV) air handlers will serve both floors of the library and the Community Meeting Room. These units will consist of internally isolated supply and return fans, variable frequency drives, economizer mixing section, prefilters, 65% efficient final filters, heating and cooling coils. The air handlers will be variable air volume units with the supply and return fans being equipped with variable frequency drives (VFD's). The supply fan VFD will modulate in response to air terminal changes in the distribution ductwork. Overall the return fan VFD tracking the supply fan drive, using either airflow measuring or established control algorithms, will control building pressurization.

- Main Library Air Handlers: Two units at 24,000 cfm each
- Community Meeting Room Air Handler: One unit at 6,500 cfm.

Exhaust Systems

Three rooftop exhaust fans will exhaust air from all toilet rooms, janitors' closets, and the elevator machine rooms.

Air Distribution and Zone Control

Air distributed from the air handlers will be through medium pressure round or flat oval ductwork to a network of pressure independent air terminal units. The ductwork will be distributed from the air-handling units to the ceiling of the first level. Use of round and flat oval medium pressure ductwork will enable air to run at velocities up to 3,000 feet per minute, minimizing the size of the ductwork.

The remainder of the air distribution will be supplied in low-pressure rectangular ductwork located in the first level ceiling space. The first level will be served from overhead conventional air diffusers. The second level will be distributed from floor diffusers at the perimeter and through the toe kicks on the second level book cases. The Community Meeting Room will be served from an overhead system consisting of medium and low-pressure ductwork.

Return air will be a plenum system as much as possible.

Airflow rates in the conference rooms will be reduced when unoccupied as determined by occupancy sensors.

Controls

The temperature control system will consist of a stand-alone direct digital control (DDC) system. Electric actuators will be used for valve and damper control. The system will be networked within the building and have a central computer as the operator interface point. That computer will have a modem to permit remote monitoring of the system by facility maintenance.

CO2 will be measured in the return air stream of the Library and Community Meeting Room air-handling units. It will be used to control the amount of outside air to these spaces. In addition, a night purge sequence will be used to save energy.

Natural and Mechanical Ventilation

The library’s lobby is suited to natural ventilation. Even on the summer day's that reaches the 90s, the nighttime temperature is in the 60s. The design could incorporate exposed thermal mass. The lobby would be night flushed to “charge” this mass to provide a comfortable interior temperature even on warm summer days. The lobby will be heated by perimeter hot-water finned tubes or in-slab, hot-water radiant piping. Operable windows in the façade and operable clerestory windows will be considered to extend natural ventilation throughout the building.

Data/Telecommunication Rooms

A 2-ton split system DX cooling unit will be provided in both the Data/Telecomm rooms.

Fire Protection

A 6” fire service will enter the building in the Mechanical Room. The buildings will be totally sprinkled in accordance with NFPA 13. The double check will be provided on a vault outside. The buildings will be provided with a wet pipe sprinkler system. Fire department connections will be provided on-site at locations accessible by fire department vehicles (pumper trucks) and in close proximity with fire hydrants.

Plumbing

Sanitary Waste

A 4” sanitary waste pipe will be stubbed out of the building and connected to an existing sanitary sewer. Sanitary waste piping extending out beyond 5-feet from the building will be done as part of the Civil Package.

Storm Drainage

An interior cast-iron, storm drain piped system will extend to 5'-0” from the building line and will connect to an on-site stormwater system designed by the Civil Engineer. The overflow storm drain system will daylight through downspout nozzles at the exterior building walls.

Domestic Water

A new water service will be provided to serve the building. We will connect to the water service 5 feet outside of the building and enter the building in the mechanical room. The water service backflow device will be provided within a vault onsite. Additional backflow devices will be provided as required by code to isolate mechanical equipment from the potable water system.

Domestic Hot Water

Instantaneous electric hot-water heaters will be provided at the Community Meeting Room toilet rooms. A condensing hot-water heater with a hot-water recirculating loop will serve the toilet rooms in the library area.

Natural Gas

Northwest Natural will provide a new gas service to the Library. The gas meter will be located outside. Gas pressure will be reduced to two pounds prior to entering the building. Natural gas will be provided to the boilers for space heating.

Fixtures

Water-conserving water closets and low-flow lavatories will be specified.

electrical systems

A complete electrical system will be provided for the Tigard Library building and site, consisting of electrical service and distribution system, interior and exterior lighting, general purpose power circuits for receptacles, equipment and computers. A telephone service will be provided for telecommunication system wiring. A fire alarm and security system will be provided. Electrical system components will be seismically braced and supported to comply with current codes. The electrical system will meet all codes and ordinances and will be guaranteed for a period of one (1) year following date of substantial completion.

Electrical Service and Distribution

The electrical service to the building will be provided from a pad mounted utility transformer. Service conductors will be routed underground to a 2,000 amp, 208Y/120 volt, three phase, four wire, free standing service rated main distribution panel (MDP) with main circuit breaker and utility metering current transformer section.

The MDP will serve the following:

- Chiller
- Two Elevators
- Branch Panelboards (for lighting)
- Branch Panelboards (for power)
- Branch Panelboard (for Community Meeting Room lighting, power and mechanical equipment)
- Motor Control Center (for mechanical equipment)

Feeders will consist of copper conductors with 600V insulation. Feeders will be installed in raceways of polyvinyl chloride conduit or electro-metallic conduit as required for the environment in which they are installed.

Molded-case, 100%-rated circuit breaker will be specified for the service main disconnect. Molded-case, 80%-rated circuit breakers with thermal magnetic trip will be specified for all branch loads.

Receptacle Load Density (watts/square foot):

- | | |
|-------------------|-----|
| • Office Areas: | 3.0 |
| • Stacks: | 0.5 |
| • Reading Areas: | 1.5 |
| • Computer Area: | 3.0 |
| • Lobby/Core: | 1.0 |
| • Toilet Rooms: | 0.5 |
| • Utility Areas: | 3.0 |
| • Community Room: | 2.0 |

Emergency Power

A 15KW, 208Y/120 volt generator located on the project site, in a weatherproof, sound attenuated housing. The generator will use diesel fuel and will include an integral skid mounted base tank sized for 8 hours of operation. The panelboard will be provided to serve egress lighting and life safety loads.

The ability to turn off all interior lighting, including emergency lighting, during non-occupied hours will be provided. Input from the building fire alarm and security systems will ensure egress lighting will be automatically energized during a fire alarm or security event.

Lighting

Site lighting will be provided at exterior pathways, parking and entrances using pole mounted HID luminaires augmented with building mounted luminaires.

General interior lighting will consist of energy-efficient fluorescent utilizing T-8 and compact lamps with electronic ballasts. Illumination levels will be per IES recommendations and will meet the current energy codes. Specialty lighting will be addressed on an area-by-area basis.

Lighting Design Criteria

Office Areas

- 1.2 watts per square foot
- 40-50 footcandle
- Fluorescent, T8 lamps, electronic ballasts

Stacks

- 1.2 watts per square foot
- 20-30 footcandle
- Fluorescent, T8 lamps, electronic ballasts

Reading Areas

- 1.7 watts per square foot
- 40-50 footcandle
- Fluorescent, T8 and compact fluorescent lamps, electronic ballasts

Lobby/Core

- 1.0 watts per square foot
- 10-15 footcandle
- Accent incandescent and compact fluorescent

Community Meeting Room

- 1.2 watts per square foot
- 30-50 footcandle
- Fluorescent, T8 and compact fluorescent lamps, electronic ballasts

Toilet Rooms

- 0.8 watts per square foot
- 10-15 footcandle
- Cove fluorescent and compact fluorescent downlights

Utility Areas

- 0.8 watts per square foot
- 20-30 footcandle
- 1x4, 2-tube open reflector fluorescent

Exterior Building

- 2-5 footcandle
- HID wall packs

Site Lighting

- 0.5-2 footcandle
- Pole mounted HID
- Bollards, HID

Specialty Lighting

See the lighting design narrative for a description of the integrated design approach to lighting the building and each type of space.

Lighting Control

Lighting switches, relays, time clocks, photo cells, devices and wiring will be provided for the following control functions:

Public Areas

Areas within daylit areas have full daylight integration with photocells and automatic dimming and/or switching ballasts. Dimming zones will correlate with the distribution of daylight within the space. Programmable time of day scheduling with relay-based control (automatic sweeps) will ensure lights are off when library is not open. Switching control will be provided in area accessible to staff only.

Utility Areas

Local control with line voltage toggle switches. Programmable time of day scheduling with relay-based control (automatic sweeps) will ensure lights are off when library is not open.

Individual Offices

Occupancy sensors set to 30 minutes.

Toilet Rooms

Occupancy sensors set to 10 minutes.

Mechanical and Equipment Rooms

Local control with line voltage switches as required by code.

Site Lighting

Programmable system using photocell and time of day inputs.

The goal is to provide areas near exterior glazing with dimming ballasts and photocells for daylight harvesting and resultant energy conservation.

Daylight sensing equipment will be analog, full-range type. Photocells will measure lighting levels on an affected interior surface. Illumination contribution to this measured surface will include both daylighting and electric lighting (closed-loop system) to ensure proper lighting levels with maximum energy savings. Logical zones of luminaires will be controlled independently for maximum energy savings while maintaining even task illumination across the entire area between zones. Time-delay logic will be incorporated to prevent cycling due to clouds and other short-term influences to lighting levels.

Receptacles

Receptacles will be provided for all finished areas and equipment rooms. A flush in-floor duct system with combination power and telephone/data devices will be utilized on first floor to serve tables and desks not located adjacent to wall or column. A flush in-floor combination of power and telephone/data poke-thru devices will be utilized on the second floor to serve tables and desks not located adjacent to wall or column.

Ground fault circuit interrupter receptacles will be provided in toilet rooms, adjacent to sinks and roof.

Grounding

System and equipment grounding will be provided. All switchboards, motor starters, panelboards, wiring systems, telephone/data backboards, etc., will be effectively grounded using green insulated copper grounding conductor.

Equipment Connections

Electrical power connections will be made to all drinking fountains, kitchen equipment and other miscellaneous equipment, including furnishing of all electrically associated devices such as disconnect switches, lock-out switches, etc., which are not furnished under Division 15.

Electrical power connections will be made to all mechanical equipment, including furnishing of all electrically associated devices such as disconnect switches, contactors, magnetic or manual starters, lock-out switches, etc., which are not furnished under Division 15.

Fire Alarm

An addressable, low-voltage fire alarm system will be provided throughout the building per NFPA standards with reporting to local agencies. Fire alarm detectors will be provided in all areas and in air handling systems as required. Audio/visual alarm notification will be provided in compliance with ADA standards. Fire protection water flow switches and valve tamper switches will be provided. Operation of an initiating device will cause a general alarm to be sounded throughout the building and indicate the appropriate zone at the main annunciator panel. A phone dialer will be provided to transmit alarms to the local fire department. Area of rescue assistance is not required.

Communications

Telephone and CATV service will be provided via underground conduit from a utility pole to the Telephone/Data Room. The service point at the site perimeter will be determined in conjunction with the appropriate utility. Two Telephone/Data rooms on first floor will be utilized for equipment racks and wiring distribution for both floors of the library. An 18-inch cable tray will be provided between the Telephone/Data rooms above ceiling on the first floor. A telephone/data cabinet will be provided to serve the Community Meeting Room. Conduits, conduit sleeves, pull boxes, outlet boxes, telephone terminal boards, etc., will be provided for the telecommunications system in accordance with the libraries system standards and/or requirements. Telecommunications outlets in finished spaces will include an outlet box with jack and Category 5e wiring to respective Telephone/Data Room. Wiring shall not exceed 290 feet. Outlets will be located per Owner requirements.

Security System

The security system will monitor all exterior doors and operable windows utilizing electro-magnetic devices. Alarms to be monitored by outside agency via automatic telephone dialer. A card key system will be utilized for staff access.

lighting systems

The lighting system will be designed to enhance the interior and exterior architectural elements of the space. By using integrated controls in conjunction with the illuminated spaces, specific scenes will be created optimizing the natural views and providing a visual journey through the space.

Lighting systems should and must be sustainable. Appropriate lamp choices will maximize lamp life, minimize the quantity of lamps maintained and stored on site, in addition to reducing maintenance costs over the life of the building. Dimming and daylight harvesting will substantially decrease energy used for lighting and cooling.

Interior Lighting Concept

Interior lighting solutions will be applied to solve specific lighting needs:

- Base ambient lighting layer in all volumes:
- Cove, soffit or suspended indirect lighting solutions will be evaluated for each space.

- Excellent functional lighting with the ability to modify or move lighting equipment with furnishings.
- Integrated, modular lighting at high stacks and electronic or reading workstations.
 - Non-intrusive lighting solutions for low stack areas where integrated lighting is not appropriate
 - Table and floor lamps will supplement ambient layer at reading chairs and quiet areas.
 - Decorative elements will enhance wayfinding and introduce icons to space.
 - Lighted signage with ability to modify text and graphics in field.
 - Unique spaces will be enhanced with unique lighting solutions, creating destinations within the Library. For example, the Oregon History Room, Grace T. Houghton Room, and Children's Area.

- Future Lighting of Art
- Pre-locating electrical or placing lighting equipment in strategic locations noted for future art.

Exterior Lighting Concept

Exterior views to north from interior spaces are very important and will be preserved. Nighttime transparency to the northern exterior is achieved with a combination of landscape lighting and interior dimming. Hard vertical surfaces opposite large areas of glazing must have lower luminance values than the exterior or strong reflections will result, creating a mirror.

Southern elevation view of interior from parking lot and street will create interest and draw potential users of Library to entrance. Transparency from exterior to interior is accomplished by deliberate and careful lighting of vertical surfaces visible only from parking, Hall Blvd. and new frontage road. Particular attention to the main lobby and primary entrance with human scale pole and path luminaires is very important to maintain a sense of destination. Careful selection of parking lot luminaires and landscape lighting will avoid glare and keep focus on the architecture while maintaining maximum safety and security during nighttime hours.

Lighting Design, Specific Room Example

- Main Floor**
- Entry Lobby**
- This space captures the interest and imagination of each person entering the Library. By lighting the vertical surfaces, the view into the space will draw people from the outside and will become the point of destination without other visual cues. Other lighting may not be necessary in this volume, as the ambient light introduced into the space to wash the walls will reflect onto the floor. A decorative icon such as a pendant or art glass chandelier would provide the focal point for this lobby.

- Circulation Desk, Information Desk, and Public Display Case**
- Light levels in this area can be relatively low as most of the space is dedicated to foot traffic. Particular attention to the application of even lighting without disturbing the architecture of this space is critical. Integration of cove and soffit lighting will allow seamless integration of indirect lighting while maintaining the integrity of the architecture. Higher light levels over the circulation desk and information desk are necessary for visual acuity of staff performing detailed task items such as reading labels and sorting materials. Integration of low glare direct lighting over work surfaces will put light where it is needed without wasting energy or resources.

- Children's Area**
- Working with color and light in the children's area of the library is both stimulating and fun. Pockets and coves over the children's desk will provide the ambient light required for the work area and will note the entrance from other locations in the library. A cove along the Southern wall with suspended indirect lighting over the stack area will maintain good working light levels for access to shelves. Hard-mounted, shaded table lamps on top of the stacks will introduce additional light into the aisle for a more relaxed feel and adequate task lighting.

- Community Meeting Room**
- This multifunctional space will require a flexible lighting system to allow events such as community meetings, video presentations, video conferencing, television broadcasts, and lectures. These applications all require different lighting solutions.

Lighting vertical and horizontal surfaces with separate zones of light will allow seamless transition from one use to another. Integrating dimming with several zones of light will enable the user of this space to access a “scene” specifically designed to perform to the task at hand. Integrating a combination of fluorescent and incandescent sources will give the space functional lighting and a touch of warmth people are accustomed to. Fluorescent lighting must be dimmable and stable down to 1%. Integrating a whole-room dimming system with several zones of lighting will allow this flexibility from day to day, and allow outside presenters and lecturers to adjust the lighting to suit their needs.

- Upper Floor**
- The upper floor provides a fantastic opportunity to utilize the architecture as a lighting element. The ceiling planes which come together in a wing shape can be lighted from below each clerestory. This alone will provide enough ambient light for the entire core of the upper floor.

- Stacks**
- All core full height stack areas will be best served with integrated lighting. With the base ambient lighting from the high ceiling, incorporating lighting into the stacks themselves will alleviate the mess of suspension cables from a high ceiling. By cantilevering a low glare luminaire into the center of each aisle, both sides of the stack will be properly illuminated from one source.

Reading Areas

The North and South wings of the upper floor, which have a significantly lower ceiling plane, will benefit from the up-lighting in the core ceiling. This will allow local lighting in the form of table and floor lamps to provide task and reading light in general seating areas. Additional recessed lighting may be necessary for proper task light levels to be achieved. If done properly, recessed lighting can disappear into the ceiling plane without a hint of its presence.

Electronic Information Center

In today's age of electronic media and digital information, use of the computer is unavoidable. Proper lighting for computer systems with either flat screens or traditional CRT-type screens is direct overhead lighting from a point source. By lighting only the horizontal surfaces, eyestrain is minimized and task lighting is maximized. Incorporating the lighting into the furnishings will provide maximum flexibility in the future. Providing individual control of lighting and dimming capability will be an attractive benefit to users.

The Oregon History Room

Historical artifacts including books, photographs, items, textiles and other sensitive materials will require a flexible and easily maintainable lighting system. Incandescent or halogen sources such as the MR16 or PAR30 are used in modern museums. Care with textiles is critical and full UV stop lenses must be installed in any light source.

The Grace T. Houghton Room

A warm and inviting community reading room with home-like furnishings will be best lit with a combination of floor and table lamps, and Halogen down-lighting. Warm color tones of incandescent sources most often associated with residential lighting will bring a relaxed and informal feel to the room. Ambient light introduced from a few carefully placed floor lamps will wash up to ceiling and vertical surfaces. Local table lamps with individual on-off switches will add a sense of personal control.

audio visual systems

The following is an outline of possible master plan audio visual systems per room.

Community Meeting Room

- Ceiling mounted video/computer data projection system
- Video cassette playback
- DVD playback
- Cable TV projection
- Audio playback system
- Voice reinforcement system
- Hardwired microphones
- Wireless microphones
- Lectern
- Floor box and wall connection panels
- Hearing impaired system
- Overhead projection/document camera
- Computer LAN connections
- Write on/wipe off surfaces
- Equipment rack
- Distance learning system
- Remote control system
- Slide projector
- Portable stage

Children's Program Room

- White marker board
- Movie playback – VHS and DVD
- Large TV monitors
- Ceiling-mounted video/computer data projection system
- Audio pay back system
- Floor box and/or wall connection panels

Training Room

- Ceiling mounted video/computer data projection system
- Audio playback with projector speakers
- Video cassette playback
- DVD playback
- Cable TV projection
- Floor box and/or wall connection panels
- Overhead projection/document camera

Conference Room

- Ceiling mounted video/computer data projection system
- Audio playback with projector speakers
- Video cassette playback
- DVD playback
- Cable TV projection
- Floor box and/or wall connection panels
- Overhead transparency projection

Audio Video Collection

- 2-4 listening stations
- Preview video booth

acoustical systems

Control of Patron Generated Noise

Employees and patrons have voiced concerns about the acoustic environment within the new library because of their experience in the existing library. At times, noise levels generated in the children’s area become intrusive into the main checkout area and the reference desk area. The building layout and acoustic treatments will be used within the new library to minimize the intrusion of sound from one area into another.

Room Acoustics Design

Room finishes within the Community Meeting Room will be selected with the goal of creating a good acoustic environment for hearing and understanding speech. Attention will be given to the selection of room finishes in areas such as the quiet study rooms and reading areas to ensure a good environment is provided for concentration and contemplation.

Mechanical System Noise Control

The HVAC system design and other mechanical equipment in the library will be designed to ensure the background sound level in the main library area does not exceed an NC 35 to 40 level. In areas of special interest such as the Community Meeting Room, the Program Room, the Grace T. Houghton Room, and the Conference Room, HVAC and mechanical equipment noise will be controlled to an NC 30 to 35 level.